

Ethanol Lab

AN ENERTECH SOLUTIONS, INC. MAGAZINE

August 2018



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Shannon L. Smith, Editor

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Thank you for taking a moment to read this edition of Ethanol Lab Magazine. It's all about Mobile Phase.

We aim to provide an innovative philosophy to serve the unique challenges that face the fuel ethanol industry. Our target is to provide information on the various technical issues and tackle the myriad of leadership and management lessons that sometimes get overlooked. Our goal is to provide an informative platform that is tailored to you the Fuel Ethanol Lab Manager and Technician. Along the way, we want to show you just how our company can help you succeed.

Jeff Smith

Jeff Smith, Owner
Enertech Solutions, Inc.



MOBILE PHASE... WE'RE LISTENING TO YOU!

BY ENERTECH SOLUTIONS, INC.

Most companies don't like to air challenges in development of a product, but we are partners with you, and believe in sharing information. The primary goal of Enertech Solutions, Inc. is to help you succeed in an industry where challenges and setbacks in lab operations are commonplace.

Several years ago we began production of our own line of mobile phase, specifically for the Fuel Ethanol

a few of the challenges we faced and explain exactly how we dealt with them.

Leaking Bags

If there was anything that made me want to hide under my desk and cry, it was hearing we had another leaking bag; it was truly maddening. We looked at everything from shipping conditions to packaging, all in an effort to stop the leaking.

was our original septa connector. Since most labs have transitioned to the "quick-connector" anyway, we decided (during our latest redesign of the bags) to completely remove our original septa connector. We plugged the empty port and along with our other established leak prevention procedures also zip tied our "quick-connector" to ensure added security. Finally...No More Leaking!

Bubbles

We have heard you loud and clear on this subject. We erroneously believed our old degassing system was adequate; we soon found out that it simply was not. Temperature, handling, and other factors added to our product continuing to have more bubbles inside the bag. To combat this problem we purchased and installed the best vacuum degasser on the market, in early 2018. It took a few trial production runs, but we are happy to say this problem has

"The primary goal of **Enertech Solutions, Inc.** is to help you succeed in an industry where challenges and setbacks in lab operations are commonplace."

– JEFF SMITH, CEO

Industry. It has not been an easy journey and there were setbacks. We had problems with leaking bags, bubbles and floaters, just to name a few. But we worked hard and dealt with each issue as it came along.

Let me take a moment to highlight

We tried out preventive measures on each bag. We transitioned from a one-clamp feature to two clamps on each line and even added caps on the end of each connector. Still the bags leaked! Through trial and error we finally figured out the culprit

now been eliminated completely. All Enertech Mobile Phase bags are now “bubble-free”!

White Floaties In The Mobile Phase

Along this journey, we received multiple reports that our product had some sort of white stringy infection. We even had several labs send in photos and return the product to us. After dumping entire lots and tearing our system apart, we sent quantities of Enertech Mobile Phase Solution out to three (3) separate, independent labs for testing. In tests for organic growth, no infection was found. The reason no infection was found is because the white stringy stuff was **NOT BIOLOGICAL!** After hearing that, we discovered one of the filters used in the production process did not stand up well to the pressure of the filtering process. The filter began to break down and expel trace fibers of nylon. We have since changed our filling process to reduce back pressure to eliminate filter degradation. No additional problems

“We believe sterility of our product to be key, and go to great lengths to ensure that every part of our process is sterile. We take things a step further via third party testing to verify the product is of the highest quality.”

– JEFF SMITH, CEO

have been encountered, and no more complaints of “white strings”!

We believe sterility of our product to be key, and go to great lengths to ensure that every part of our process is sterile. We take things a step further via third party testing to verify the product is of the highest quality.

Packaging Issues

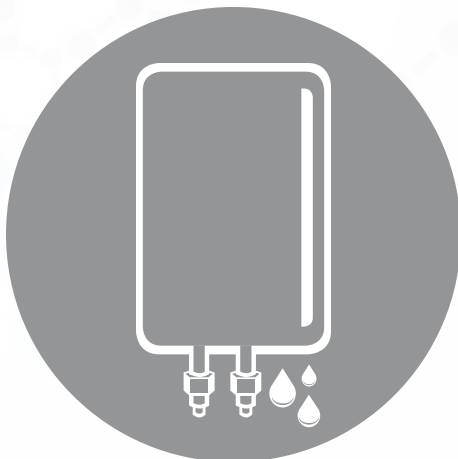
We have heard you and are actively addressing these issues with our shipping representative. Rest assured...new innovations are coming, and we will keep you advised.

Give Us Another Opportunity

A number of labs suffered with us through this lengthy “development phase” and we thank you sincerely.

We are averaging sales of 150 cases per month, but know that we are just scratching the surface. We also know that the leaking, bubbles and floaties made some of you unhappy with our product, or decide not to try it at all, based upon word of mouth. We don’t blame you for that. We understand...you have a lab to run and need the best quality products consistently available. But, we also want you to know that your complaints have been heard and addressed. We hope the information in this article reassures you enough to give us a second try.

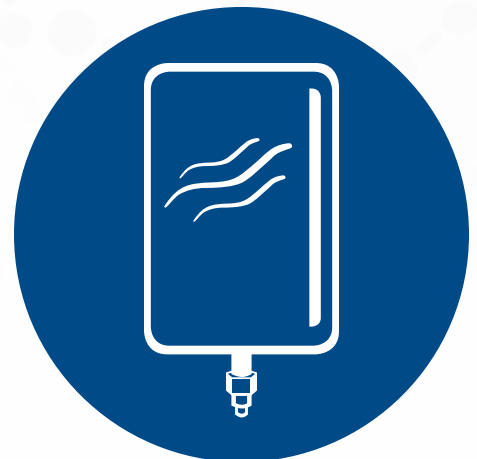
Stay Tuned—More Good Things to Come!



**NO MORE
LEAKING BAGS**



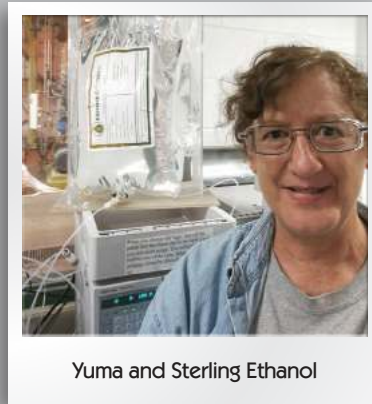
**NO MORE
BUBBLES**



**NO MORE
WHITE FLOATIES**



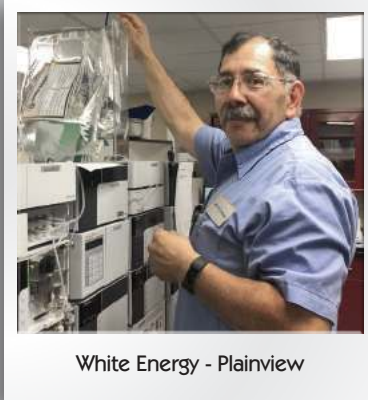
East Kansas Agri Energy



Yuma and Sterling Ethanol



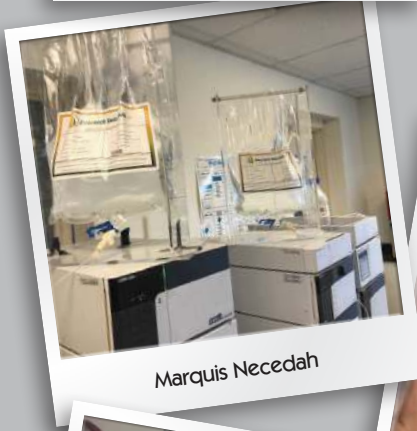
Golden Grain Ethanol



White Energy - Plainview



Prairie Horizon



Marquis Necedah



Reeve Agri Energy



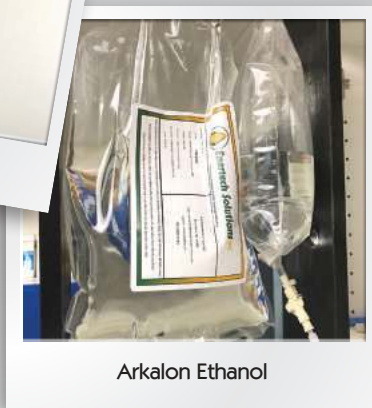
Didion Ethanol



Bonanza Ethanol



Big River Boyceville



Arkalon Ethanol



Ace Ethanol



Three Rivers Energy

*Plus many more!



Enertech Solutions INC

MOBILE PHASE

**DON'T DRAIN
YOUR BUDGET.**

YOU HAVE A CHOICE.

SAME
CONNECTOR YOU
ALREADY USE.



Join many other labs and make the switch today.
Let Enertech Solutions be your provider.

Visit us at www.enertechonline.com for all your supply needs.

BETTER QUALITY. BETTER PRICE.

**Check Out Our
New Product:**

Looking for .010N
Mobile Phase?



We have it!
In stock and
ready to go.



YOU HAVE A CHOICE.

A WORD ABOUT

QUALITY

BY ENERTECH SOLUTIONS, INC.

To build a better, more highly tested product for the ethanol industry requires us to be on top of our game. We set our goal to make a product that does not simply reproduce competitors products, we invest time and effort to exceed the standard and manufacture Mobile Phase that is uniquely our own.

To ensure quality assurance of our products, every batch of EnerTech Solutions Mobile Phase is checked for sterility, pH, concentration, and water purity. An **ICP/MS** analysis for trace metal impurity at the parts per billion level is performed on every batch to ensure that not only the water is **ASTM-1A**, but also the sulfuric acid is not contributing to **background contamination** as well. As an additional precaution, a sample was pulled from a bag that was over one year old and analyzed by high resolution accurate mass liquid chromatography mass spectrometry (**LC/HRAM**) for leachable materials. No contamination could be found in either positive or negative ionization mode.

Our containers are engineered to meet your needs for single-use bioprocessing applications. The bags are manufactured with a specialized film that is designed to withstand the most demanding requirements of your lab.

ICP/MS (Inductively Coupled Plasma/Mass Spectrometry)

This is the state-of-the-art instrument for elemental analysis. The ICP torch reaches about 5000C and completely ionizes everything in the sample. The MS identifies and counts the ions at each mass. For most elements, it is sensitive to less than one part per billion. This proves the quality of the water and sulfuric acid.

ASTM-1A is the specification for ultra pure water as set by ASTM, 18 megOhm and <50 pub Total Organic Carbon.

Background Contamination

Metal/mineral contamination that could be in the sulfuric acid. If a lower quality acid is used, it will have metals in it which will contaminate water. We run the mobile phase after mixing to prove that the water, acid, container, tubing, etc. is not leaching metals into the water.



QUALITY

Biocompatibility testing is conducted to ensure that the film and other contact surfaces have no adverse effects on any biological material that may be contained within the sample. Permeability of gases and water vapor are important properties of the film. Resistance to the transmission of oxygen, carbon dioxide, and other gases is important in controlling the pH and chemical properties of a single-use containers' fluid content. Resistance to the transmission of water vapor is also important to the control of the concentration of a container's fluid content. Factors that effect a film's permeability characteristics include film composition, film thickness, temperature, and relative humidity (RH).

The mechanical properties of a film are important to the integrity of a container and its suitability of use under varying conditions. The mechanical properties evaluated were tensile strength, elongation, yield strength, secant modulus, tensile toughness, puncture resistance, and seam strength.

LC/HRAM (Liquid Chromatography/High Resolution Accurate Mass Mass Spectrometry)

LC is the column and mobile phase, our HRAM is a mass spectrometer that can see the mass shift from the loss of an electron (0.00045) and can tell the two masses apart. It is a state-of-the-art mass spectrometer. To put the organic compounds into the mass spec, the source can apply a positive charge or a negative charge. Most compounds are more sensitive in one or the other so we ran both to make sure we did not miss something.



MOBILE PHASE BAGS ARE QUALITY TESTED FOR:

- **Tensile Strength** is the maximum amount of stress that a material can handle before breaking.
- **Elongation** is the amount of extensions of an object under stress, usually expressed as a percentage of the original length.
- **Yield Strength** is the minimum amount of stress on a material at which it begins to permanently deform.
- **Tensile Toughness** is a measure the ability of a material to absorb energy and deform up to the point of failure (fracturing).
- **Secant Modulus** is the measure of a material's elasticity and stiffness.
- **Puncture Resistance** is a measure of the amount of force required to pierce a material.
- **Seam Strength** is a measure of the force required to rupture a seam.

Our bags are manufactured and verified for these mechanical properties. These tests prove capable of resisting the stresses that are incurred during shipping and regular use.

Fuel Ethanol Products

Choose EnerTech Solutions! We meet your demand for best in service, quality, and price in the Ethanol Industry. Globally researched products with standards of excellence. Efficient order and supply system! No long term contracts, or lead time. Fully stocked inventory. Managed system provides a unique package of blended standards, chemicals, and supplies each month. Saves time, money, and worry!

For more information or to order, click on any image below.



SYRINGE FILTERS



HPLC VIALS WITH CAPS



MOBILE PHASE



STANDARDS
Reference/Custom



GLOVES



CENTRIFUGE TUBES



CHEMICALS



MOISTURE PANS & WEIGHING DISHES



BOTTLES



SYRINGES



FILTER PAPERS



TRANSFER PIPETTES



MISC. LAB CONSUMABLES



Why Enertech?

Enertech Solutions, Inc. is a veteran-owned small business. As a veteran owned business three traits guide the direction of my company:

Discipline, Honor and Initiative

- Discipline, helps me run my business efficiently.
- Honor, guides me to serve my customers best interest.
- Initiative, gives me the desire to constantly improve processes, keep up with new technologies, and take advantage of opportunities to provide new and improved services to my clients.

“I started this company as a support to the domestic energy industry both renewable, and conventional. We are doing our part for the success of domestic energy production. We believe that energy security plays a crucial role in our national security.”

– Jeff Smith, Founder, Enertech Solutions, Inc.

Enertech Solutions Truths:

Enertech Truth #1

We built
a smarter
way
to save.

Enertech Truth #2

Our every
day low
prices beat
their specials.

Enertech Truth #3

We SAVE
your lab
budget
and TIME.

Thank You

for taking the time to enjoy

Ethanol Lab Magazine

We value your feedback and
welcome you to contact us with
any questions or comments.

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